



According to Regulation (EC) 2015 /830

### 1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY


1.1 Product identifier	
Substance name	Aluminum chloride hydroxide sulfate
Trade name	CFS, CFS10Al, PACS
IUPAC name	Aluminium hydroxychlorosulphate
EC#	254-400-7
CAS#	39290-78-3
Molecular formula	Al <sub>2</sub> O <sub>3</sub> .M.HCl.M <sub>2</sub> .H <sub>2</sub> SO <sub>4</sub> .zH <sub>2</sub> O; or Al(OH) <sub>a</sub> Cl <sub>b</sub> (SO <sub>4</sub> ) <sub>c</sub> ; where molar ratio M= HCl/Al <sub>2</sub> O <sub>3</sub> ; M <sub>2</sub> = H <sub>2</sub> SO <sub>4</sub> /Al <sub>2</sub> O <sub>3</sub> ; z= 4 to 24; a= 3-M/2-M <sub>2</sub> Basicity= a/3*100% =70±5%
This substance is not classified according to Annex I of Directive 67/548/EEC and Annex VI of Regulation (EC) No 1272/2008	
<b>REACH reference number</b>	<b>01-2119972943-24-0000</b>
<b>Reference number of C&amp;L Notification</b>	<b>02-2119639710-41-0000</b>

1.2 Relevant identified uses of the substance and uses advised against	
Identified uses	Treatment of surface water for the production of drinking water or industrial use water. Treatment of industrial waste waters coming notably from iron and steel, papermaking, petroleum and chemical industries. Separation of suspended solids in process water to recycle them. Other uses: cosmetics, washing agent and disinfectants, in photography, textile
Uses advised against	none

1.3 Details of the company	
Manufacturer	SOLVO Ltd 1784, Mladost 1-13-6-43, Sofia, Republic of Bulgaria tel. +359 28770281 (working time only) e-mail: <a href="mailto:office@solvobg.com">office@solvobg.com</a>
Responsible person	Hristo Dobrev tel.(mobile): +359 899149953
1.4 Emergency telephone number	
	+359 112 (twenty-four-hour)



### 2. HAZARDS IDENTIFICATION

2.1. Classification of the substance	
Aluminum chloride hydroxide sulfate	
Substance classification according to Regulation (EC) No 1272/2008 [CLP/GHS] (self-classification)	
Hazard Class and Category Code	Acute Tox. - conclusive but not sufficient for classification. Eye Irrit. 1
Hazard Statement	H318 H290
Substance classification according to Directive 67/548/ EEC	
Hazard symbol	Xi
Risk phrases	R41 - Risk of serious damage to eyes
Safety advice appearing	S23, S26, S28, S37/39
Additional information	
See section 16 for full text of R- H-phrases	
Human Health effects	
Inhalation	Large doses may cause dryness of the mouth and respiratory disorder.
Eyes	Large doses may cause lachrymation (tears), heating and conjunctivitis.
Skin	Single exposure will not produce irritation. Prolonged exposure in some instances may cause dermatitis to develop.
Ingestion	Causes irritation of the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea.
2.2 Label elements	
Product identifier	Aluminum chloride hydroxide sulfate No index number in CLP Annex VI
2.3 Other hazards	
Aluminum chloride hydroxide sulfate is neither a PBT nor a vPvB substance.	
Hazard pictograms	GHS05: corrosion 
Signal word	Warning
Hazard statements	H318: Causes serious eye damage; H290: May be corrosive to metals
Precautionary statements	P261: Avoid breathing dust/fume/gas/mist/vapours/spray. P264: Wash... thoroughly after handling. (Wash hands thoroughly after handling.) P280: Wear protective gloves/protective clothing/eye protection/face protection. (P280: Wear protective gloves/eye protection/face protection.) P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P310: Immediately call a POISON CENTER or doctor/physician. P406: Store in corrosive resistant/... container with a resistant inner liner. (Store in corrosive resistant container with a resistant inner liner.)



### 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Constituent			
Chemical name	EC #	Remarks	Concentration range % (w/w)
Aluminum chloride hydroxide sulfate (CFS)	254-400-7	$\text{Al}(\text{OH})_{2.34}\text{Cl}_{0.5}(\text{SO}_4)_{0.08}$	$\geq 80.0$ — $\leq 95.0$
3.2 Impurity		Impurity is relevant for C&L of the substance.	$> 1.0\text{E-}4$ — $< 0.1$
Impurity of heavy metals e.g. As, Cr, Pb, Se	Standard BDS EN 17034:2018		$< 0.1$

### 4. FIRST AID MEASURES

4.1. Description of first aid measures	
General information	No known delayed effects. Consult a physician for all exposures except for minor instances.
4.2. Most important symptoms and effects, both acute and delayed	
In case of inhalation	Remove source of dust or move person to fresh air. Get medical attention immediately.
In case of eye contact	Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
In case of skin contact	Wash affected area immediately with plenty of water. Remove contaminated clothing.
In case of ingestion	Never give anything by mouth to an unconscious person. Wash mouth with water and drink copious quantities of water. Do not induce vomiting. Seek medical advice immediately
Information to physician	Treat symptomatically and supportively.
First aid arsenal	Universal medical kit with a set of drugs (in consultation with the medical department of the enterprise).
4.3 Indication of any immediate medical attention and special treatment needed	
	Immediate first aid attention is not expected

### 5. FIREFIGHTING MEASURES

5.1. Extinguishing media	
Suitable extinguishing media	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Using extinguishing media depends on fire hazard/explosion characteristics of combustibles in area.
Unsuitable extinguishing media	Do not scatter spilled material with high pressure water streams in case of large fire.
5.2. Special hazards arising from the substance.	
Hazardous combustion products	Non-flammable, it does not sustain combustion. Possibility of thermal decomposition to form alumina and hydrogen chloride and sulfur oxides.



Special protective equipment for fire-fighters	Wear full protective clothing and NIOSH-approved self-contained breathing apparatus in case of large fire.
Flammable properties	Non-flammable, non-explosive, see section 9.
<b>5.3 Advice for fire-fighters</b>	
During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Substance is noncombustible.	

## 6. ACCIDENTAL RELEASE MEASURES

<b>6.1 Personal precautions, protective equipment and emergency procedures</b>	
Personal precautions	Wear appropriate personal protective equipment as specified in Section 8
Avoid dust formation. Avoid inhaling dust. Ensure adequate ventilation. Do not touch or walk through spilled material.	
Is and place in a suitable container for reclamation or disposal, using a method that does not generate dust. Ventilate area of leak or spill. Keep unauthorized personnel away.	
<b>6.2. Environmental precautions</b>	
Do not allow product to reach sewage system or any watercourse. Inform respective authorities in case of seepage into watercourse or sewage system. Dilute with plenty of water. Do not allow to enter sewers/ surface or ground water. Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.	
<b>6.3 Methods and material for containment and cleaning up</b>	
Sweep or vacuum up and place in an appropriate closed container. Avoid generating dust. Cover large powder spill with plastic sheet or tarp to minimize spreading. Clean up residual material by washing area with water and detergent. Collect washings for disposal. If spilled: collect in dry form into the lockable-labeled container. The solutions and melts are covered with sand, ground or some sorbing agent, and then the mixture should be collected and put into the lockable-labeled container for further use in production or landfill. Aerate room afterwards and wash release area.	
<b>6.4 Reference to other sections</b>	
Information about personal precautions - see Section 8. Information about waste disposal - see Section 13.	

## 7. HANDLING AND STORAGE

<b>7.1. Precautions for safe handling</b>	
Precautions for safe handling	Avoid excessive generation of dust Avoid direct or prolonged contact with skin and eyes. Do not ingest.
Fire preventions	None, as the product has no flammable properties. See Section 5.
Aerosol and dust generation preventions	Use local exhaust ventilation or other appropriate engineering controls to maintain dust exposures below occupational exposure limit.



Electrostatics prevention	As a matter of good practice take measures to prevent the build up of electrostatic charge, such as ensuring all equipment is electrically grounded.
Safe transporting	Adhere to the rules on the transport of goods, which operate for the appropriate type of transport. Do not violate the integrity of container. During loading works execute instructions and rules for the appropriate works.
Advice on general occupational hygiene	Do not eat, drink or smoke in work areas. Wash hands after use, remove contaminated clothing and protective equipment before entering eating areas.
<b>7.2. Conditions for safe storage, including any incompatibilities</b>	
Technical measures and storage conditions	Store in manufacturer's package in cool and dry area where it is safe from contamination and exposure to atmospheric precipitations (rain, snow) and subsoil waters. Store away from incompatible materials (see section 10).
Packaging materials	Package should exclude moisture penetration and guarantee the safety of the product during transportation and storage.
Requirements for storage rooms and vessels	Special requirements for storage structures are not established. The product is to be stored at room temperature and average humidity environment.
<b>7.3. Specific end use(s)</b>	
None	

### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>8.1. Control parameters</b>	
Occupational exposure limits	
Aluminium salts, soluble	Limit value - Eight hours - 2 mg/m <sup>3</sup> (inhalable aerosol)
<b>8.2 Exposure controls</b>	
Occupational exposure controls	
Appropriate engineering controls	Running drinkable water must be supplied to the production facilities. Storage of food and eating in the substance processing area are forbidden. Handling systems should preferably be enclosed or suitable ventilation installed to maintain atmospheric dust below the OES, if not wear suitable protective equipment.
Respiratory protection	Use dust respirator according to the EN149 equipped with the dust recovery filter according to the EN 143.
Eye/face protection	Wear dust-proof goggles according to the EN166, tight fitting goggles with side shields, or wide vision full goggles. Do not wear contact lenses when handling this product. It is also advisable to have individual pocket eyewash.
Skin protection	Use protective clothing fully covering skin, full length pants, long sleeved overalls with close fittings at openings. Footwear resistant to caustics, and avoiding dust penetration



General hygiene considerations	Emergency eyewash and safety shower should be in close proximity as a matter of good practice. Wash hands and face thoroughly with mild soap before eating and drinking. Wear clean, dry personal protective equipment. Barrier cream can be used if necessary. If heavily exposed daily, employees must shower, and if necessary use a barrier cream to protect exposed skin, particularly neck, face and wrists.
Environmental exposure controls	
Measures to prevent exposure	All ventilation systems should be filtered before discharge to atmosphere. The product won't produce toxic compounds in air and wastewaters in the presence of other substances or agents. Provided that all necessary sanitary rules for transportation and storage are adhered, the possibility of environmental pollution is eliminated.
Consumer exposure controls	
Measures related to consumer uses of the substance	Special measures are not required.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties	
Appearance	Clear to turbid liquid or solid granules max sized 20 mm.
Odour	Odorless
Odour threshold	Not applicable
Initial boiling point/range (°C)	103 to 105°C
Freezing point (°C)	-3°C (10%Al) ; -18°C (3,7%Al)
Viscosity @ 20°C, mPa.s	15±5 mPa.s
Density @ 20°C, g/cm <sup>3</sup>	1.3 g/cm <sup>3</sup>
Flammability	not applicable
Water solubility	Complete

### 10. STABILITY AND REACTIVITY

<b>10.1 Reactivity</b>	Not reactive under regular storage and use conditions.
<b>10.2 Chemical stability</b>	The product appears to be stable under normal use and recommended storage conditions. The substance does not react with its container.
<b>10.3 Possibility of hazardous reactions</b>	Hazardous polymerization does not occur.
<b>10.4 Conditions to avoid</b>	Will react with sulphates of alkali metals, acids and alkalis. At conditions of humidity the material provokes corrosion of iron and its alloys, aluminium and steel. Reacts with water with sulphuric acid formation, including release of heat. May corrode metals in the presence of moisture.
<b>10.5 Incompatible materials</b>	Incompatibility with the following materials: strong oxidizing agents (for example: chlorine, perchlorates, peroxides); strong bases (for example: sodium hydroxide). Materials to avoid: Strong oxidizing agents.
<b>10.6 Hazardous decomposition products</b>	



	<p>Thermal decomposition: Aluminum chloride hydroxide sulfate begins to liberate water at 90°C. Complete dehydration above 350°C. Decomposition products: Hazardous decomposition products formed under fire conditions: Hydrogen Chloride, Sulphur oxides, Aluminum oxide</p>
--	--

### 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects.				
Toxicokinetics, metabolism and distribution				
Non-human toxicological data				
Reason: study scientifically unjustified Justification: Substance is hydrolytically unstable-rapid hydrolysis and precipitation. Dissolved aluminum is less than 0.01 to 0.1 mg /L				
Human toxicological data		No information is available.		
Acute toxicity				
According to an acute oral toxicity test conducted with aluminium sulphate it can be stated that the substances shows low orally toxic characteristics. The oral LD50 in mouse was determined to be 6200 mg/kg body weight or 980 mg Al/mg bw. LD50 Rat oral >5000 mg/kg bw /Hydrated aluminum sulfate (Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> , 14.3H <sub>2</sub> O)/ <b>Practically Non- toxic.</b> (Method OECD Guideline 401,402,403).				
Irritation/Corrosion	Skin	Not irritating. No epidermal and pathological changes and dermal reactions were observed with aluminium sulphate treatment up to 632.6 mg/kg bw. (OECD Guideline 404). Aluminium sulphate has a slightly corrosive effect in presence of moisture.		
Respiratory or skin sensitization	Eye	The substance is classified as "irritating to eyes".		
	Respiratory tract	No information available: not required. Small doses won't produce negative effects. Large doses may cause gastro enteric upset.		
	Respiratory sensitizing. Human information No relevant information available Not skin sensitizing. Reason: study scientifically unjustified.			
Germ cell mutagenicity	Negative. Negative aluminium sulfate show negative result of micronuclei in the bone marrow in vivo up to the test concentration of 250 mg/kg bw. Negative aluminium sulfate show negative result in micronuclei (MN) test in vitro up to the test concentration of 0.5 mg/kg bw, whereas at 1, 2 and 4 mg/kg bw show minimal effects			
Carcinogenicity	Negative. In accordance with column 2 of REACH Annex X, no carcinogenicity study needs to be proposed as aluminium sulphate is not genotoxic.			
Toxicity for reproduction	Human information No relevant information available			
Repeated dose toxicity				
Exposure	Value	Exposure time period	Species	Method
oral	NOAEL = 342 mg/kg bw/day	subchronic	rat	OECD Guideline 407



### 12. ECOLOGICAL INFORMATION

12.1. Toxicity				
Aquatic toxicity		Results	Remarks	Reference
<b>Short-term effects on fish</b> <i>Salmo gairdneri</i> (new name: <i>Oncorhynchus mykiss</i> )  freshwater  static 96 hour static test		LC50 (96 h): 36.6 mg/L test mat. (meas. (not specified)) based on: mortality	2 (reliable with restrictions)  key study  read-across from supporting substance (structural analogue or surrogate) <b>Test material (Aluminium chloride): AlCl<sub>3</sub></b>	Call et al. (1984)
<b>Short-term toxicity to aquatic invertebrates</b> <i>Daphnia magna</i>  freshwater  static  USEPA/600/4-90/027F ISO 6341 15 (Water quality - Determination of the Inhibition of the Mobility of Daphnia magna Straus (Cladocera, Crustacea))		EC50 (24 h): 782 µg/L dissolved (aluminium) (nominal) based on: mobility	read-across from supporting substance (structural analogue or surrogate) <b>Test material (EC number): 233-135-0</b>	Guida et al. (2004)
12.2 Persistence and degradability				
Abiotic Degradation		Remark		
Half time	Method	In accordance with REACH Annex XI, testing may be omitted if testing does not appear scientifically necessary. Simple inorganic salts are not susceptible to <u>photodegradation</u> .		
Biodegradation		When hydrolyzed Aluminum chloride hydroxide sulfate forms aluminium hydroxide precipitate and a dilute hydrochloric and sulfuric acid solution.		
12.3 Bioaccumulative potential				
Simple inorganic salts with high aqueous solubility will exist in a dissociated form in an aqueous solution. Such a substance has a low potential for bioaccumulation. Cumulation: weak.				
12.4 Mobility in soil				
As inorganic compounds, traditional degradation studies are not applicable. Due to the water solubility and the ionic nature, the substances are not expected to adsorb or bioaccumulate, water is the main target compartment, and the substance will not volatilize from soil. The substance won't transform in ambient medium.				
12.5 Results of PBT and vPvB assessment				
The substance is not PBT or vPvB.				
12.6 Other adverse effects				
None				

### 13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods	
Appropriate disposal / Product	Waste disposal should be in strict correspondence with local and national laws and regulations.
Waste codes / waste designations according to EWC / AVV	None, waste is not classified as hazardous according to Commission Decision 2000/532/EC.





Appropriate disposal /Packaging	Dispose of container and unused contents in accordance with local and national requirements.
---------------------------------	--

### 14. TRANSPORT INFORMATION

<b>14.1. UN number</b>	Not applicable
<b>14.2. UN proper shipping name</b>	Not applicable.
<b>14.3. Transport hazard class(es)</b>	Not applicable. Not classified as hazardous for transport. Not subject to transport regulations.
<b>14.4. Packing group</b>	Not applicable.
<b>14.5. Environmental hazards</b>	Not applicable.
<b>14.6. Special precautions for user</b>	Avoid any release of dust during transportation.
<b>14.7 Transport in bulk according to Annex II of MARPOL73/78 and the</b>	Not applicable.
<b>14.8 Additional information</b>	The product is transported by railway (RID), road (ADR), and sea (IMDG) transport. The cargo is classified as non-hazardous in compliance with the international rules of carriage. Obligatory mark «Keep dry».

### 15. REGULATORY INFORMATION

<b>15.1 Safety, health and environmental regulations specific for the substance EU regulation</b>
This product is according to: Directive 67/548/EC Directive 1999/45/EC, Regulation (EC) No 1272/2008

### 16. OTHER INFORMATION

<b>Relevant R- , H-, P-, EUH-phrases</b>
Hazard symbol: Xi: Irritant R - phrases: R41 - Risk of serious damage to eyes S - phrases: S23: Do not breathe gas/fumes/vapour/spray ( <i>appropriate wording to be specified by the manufacturer</i> ) S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice S28: After contact with skin, wash immediately with plenty of water S37/39: Wear suitable gloves and eye/face protection Hazard Statement: H290: May be corrosive to metals H318: Causes serious eye damage. Category Code: Eye Irrit. 1 - Eye irritation category 1
<b>Abbreviation</b>
LD50 - lethal dose LC50 - lethal concentration EC50 - half maximal effective concentration NOAEL - no observed adverse effect level PBT or vPvB - persistent, bioaccumulative and toxic or very persistent very bioaccumulative.

Date: 12.11.2021

Version: 14

Replaces version: 13